CSA1618 DWDM-DE

EXPERIMENT-24

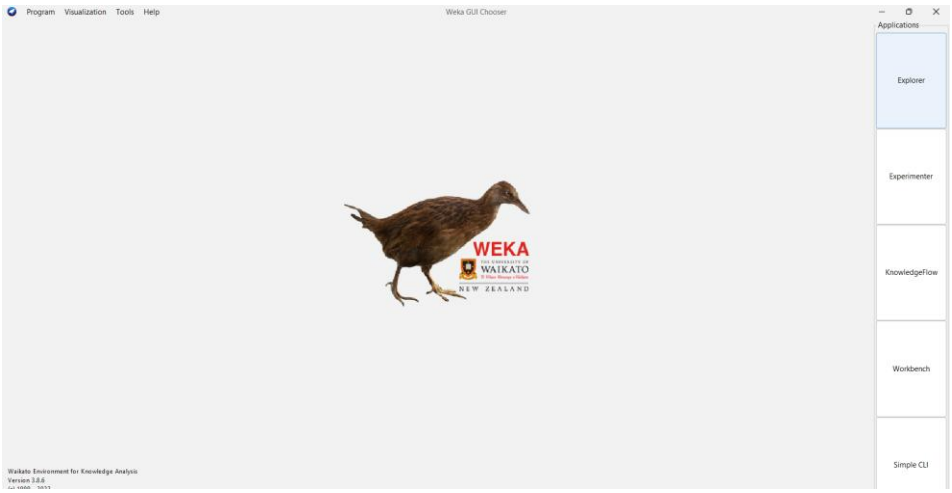
DATA SEGMENTATION BY COBWEB – HIERARCHIAL CLUSTERING ALGORITHM USING WEKA TOOL

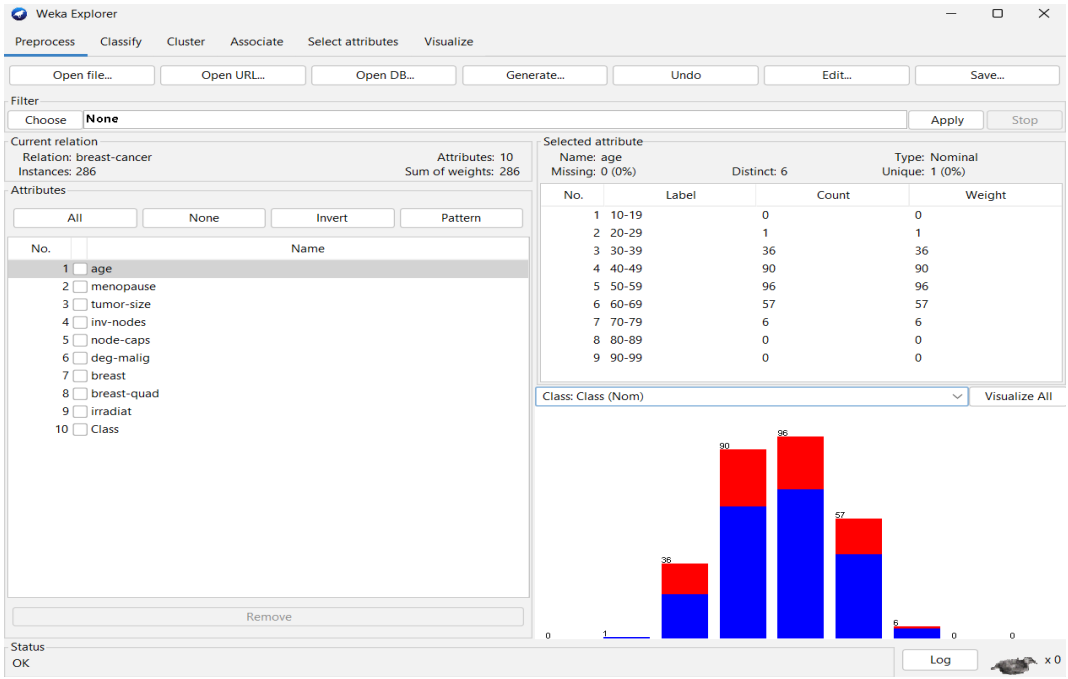
AIM:

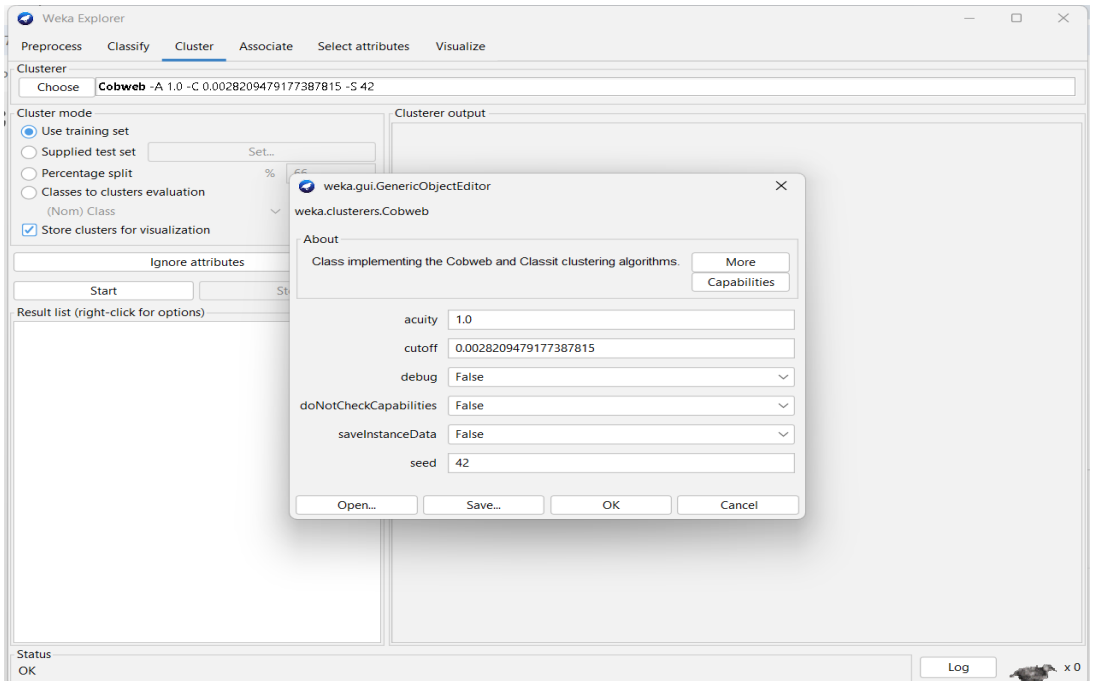
To create data segmentation by cobweb-hierarchial clustering algorithm using weka tool.

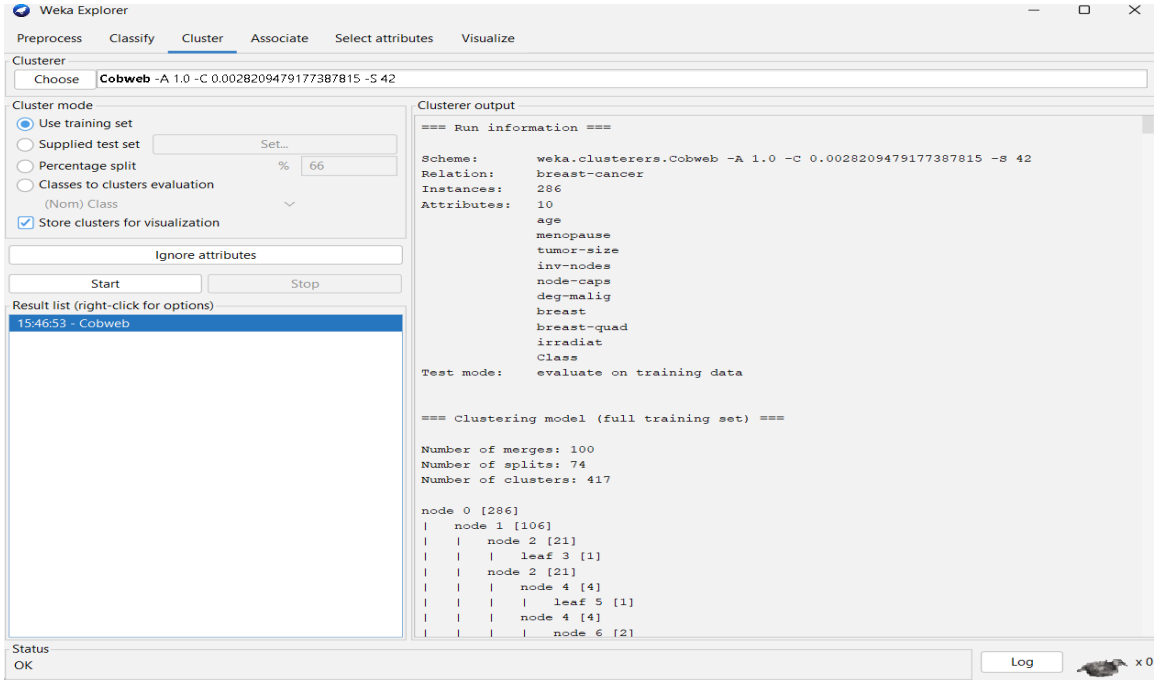
PROCEDURE:

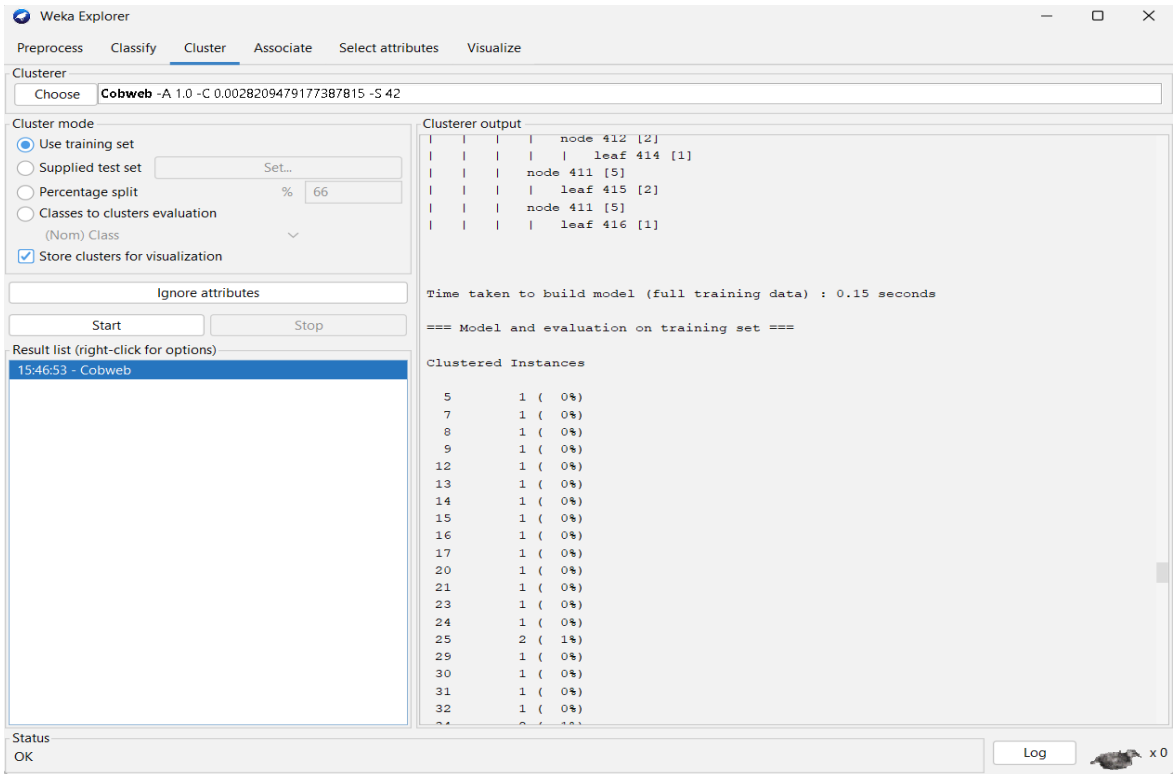
1. Download and install WEKA.
2. Open WEKA and Choose "Explorer" from the main menu.
3. Under Preprocess, Click on the open file button and select the dataset. Ensure that categorical attributes are in the correct format (nominal, not numeric).
4. Click on the "Cluster" tab. In the Cluster mode section, select "Use training set".
5. Click "Choose" (next to the cluster algorithm) and Select **Cobweb** (found under weka.clusterers).
6. Click on **"Cobweb"** to configure parameters: **acuity (Default = 1.0):** Controls cluster granularity (higher values lead to fewer clusters). **cutoff (Default = 0.002):** Defines the threshold for merging clusters (higher values result in more clusters).
7. Click **"OK"** and then **"Start"** to begin clustering. Click "Visualize" to see how the clusters are distributed. Save the file.




Weka Explorer
Preprocess
Classify
Cluster
Associate
Select attributes
Visualize
Open file...
Open URL...
Open DB...
Generate...
Undo
Edit...
Save...
Filter
Choose
None
Apply
Stop
Current relation
Relation: breast-cancer
Instances: 286
Attributes: 10
Sum of weights: 286
Selected attribute
Name: age
Missing: 0 (0%)
Distinct: 6
Type: Nominal
Unique: 1 (0%)
Attributes
All
None
Invert
Pattern
No.
Name
1 age
2 menopause
3 tumor-size
4 inv-nodes
5 node-caps
6 deg-malig
7 breast
8 breast-quad
9 irradiat
10 Class
No.
Label
Count
Weight
1 10-19 0 0
2 20-29 1 1
3 30-39 36 36
4 40-49 90 90
5 50-59 96 96
6 60-69 57 57
7 70-79 6 6
8 80-89 0 0
9 90-99 0 0
Class: Class (Nom)
Visualize All
Remove
Status
OK
Log
x 0


Weka Explorer
Preprocess
Classify
Cluster
Associate
Select attributes
Visualize
Clusterer
Choose
Cobweb -A 1.0 -C 0.0028209479177387815 -S 42
Cluster mode
Use training set
Supplied test set
Set...
Percentage split
Classes to clusters evaluation
(Nom) Class
Store clusters for visualization
Ignore attributes
Start
Result list (right-click for options)
Clusterer output
weka.gui.GenericObjectEditor
weka.clusterers.Cobweb
About
Class implementing the Cobweb and Classit clustering algorithms.
More
Capabilities
acuity 1.0
cutoff 0.0028209479177387815
debug False
doNotCheckCapabilities False
saveInstanceData False
seed 42
Open...
Save...
OK
Cancel
Status
OK
Log
x 0


Weka Explorer
Preprocess
Classify
Cluster
Associate
Select attributes
Visualize
Clusterer
Choose
Cobweb -A 1.0 -C 0.0028209479177387815 -S 42
Cluster mode
Use training set
Supplied test set
Set...
Percentage split
%
66
Classes to clusters evaluation
(Nom) Class
Store clusters for visualization
Ignore attributes
Start
Stop
Result list (right-click for options)
15:46:53 - Cobweb
Clusterer output
=== Run information ===
Scheme: weka.clusterers.Cobweb -A 1.0 -C 0.0028209479177387815 -S 42
Relation: breast-cancer
Instances: 286
Attributes: 10
age
menopause
tumor-size
inv-nodes
node-caps
deg-malig
breast
breast-quad
irradiat
Class
Test mode: evaluate on training data
=== Clustering model (full training set) ===
Number of merges: 100
Number of splits: 74
Number of clusters: 417
node 0 [286]
| node 1 [106]
| | node 2 [21]
| | | leaf 3 [1]
| | node 2 [21]
| | | node 4 [4]
| | | | leaf 5 [1]
| | | node 4 [4]
| | | | node 6 [2]
Status
OK
Log
x 0


Weka Explorer
Preprocess
Classify
Cluster
Associate
Select attributes
Visualize
Clusterer
Choose
Cobweb -A 1.0 -C 0.0028209479177387815 -S 42
Cluster mode
Use training set
Supplied test set
Set...
Percentage split
%
66
Classes to clusters evaluation
(Nom) Class
Store clusters for visualization
Ignore attributes
Start
Stop
Result list (right-click for options)
15:46:53 - Cobweb
Clusterer output
| | | | | node 412 [2]
| | | | | | leaf 414 [1]
| | | | node 411 [5]
| | | | | leaf 415 [2]
| | | | node 411 [5]
| | | | | leaf 416 [1]
Time taken to build model (full training data) : 0.15 seconds
=== Model and evaluation on training set ===
Clustered Instances
5 1 (0%)
7 1 (0%)
8 1 (0%)
9 1 (0%)
12 1 (0%)
13 1 (0%)
14 1 (0%)
15 1 (0%)
16 1 (0%)
17 1 (0%)
20 1 (0%)
21 1 (0%)
23 1 (0%)
24 1 (0%)
25 2 (1%)
29 1 (0%)
30 1 (0%)
31 1 (0%)
32 1 (0%)
Status
OK
Log
x 0

OBSERVATION:

=== Run information ===

Scheme: weka.clusterers.Cobweb -A 1.0 -C 0.0028209479177387815 -S 42

Relation: breast-cancer

Instances: 286

Attributes: 10

age

menopause

tumor-size

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Class

Test mode: evaluate on training data

=== Clustering model (full training set) ===

Number of merges: 100

Number of splits: 74

Number of clusters: 417

node 0 [286]

| node 1 [106]

| | node 2 [21]

| | | leaf 3 [1]

| | node 2 [21]

| | | node 4 [4]

| | | | leaf 5 [1]……..

| | | node 411 [5]

| | | | leaf 415 [2]

| | | node 411 [5]

| | | | leaf 416 [1]

Time taken to build model (full training data) : 0.15 seconds

=== Model and evaluation on training set ===

Clustered Instances

5 1 (0%)

7 1 (0%)

8 1 (0%)

9 1 (0%)

12 1 (0%)

13 1 (0%)

14 1 (0%)

15 1 (0%)

16 1 (0%)

17 1 (0%)

20 1 (0%)

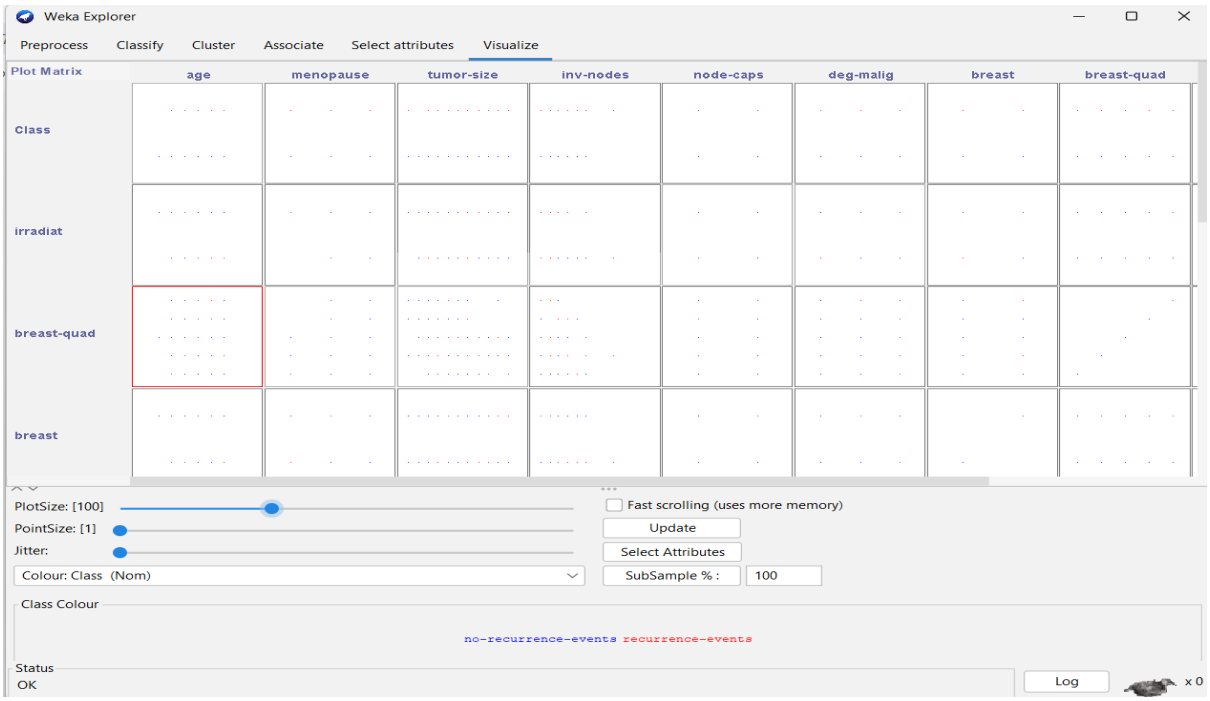
21 1 (0%)

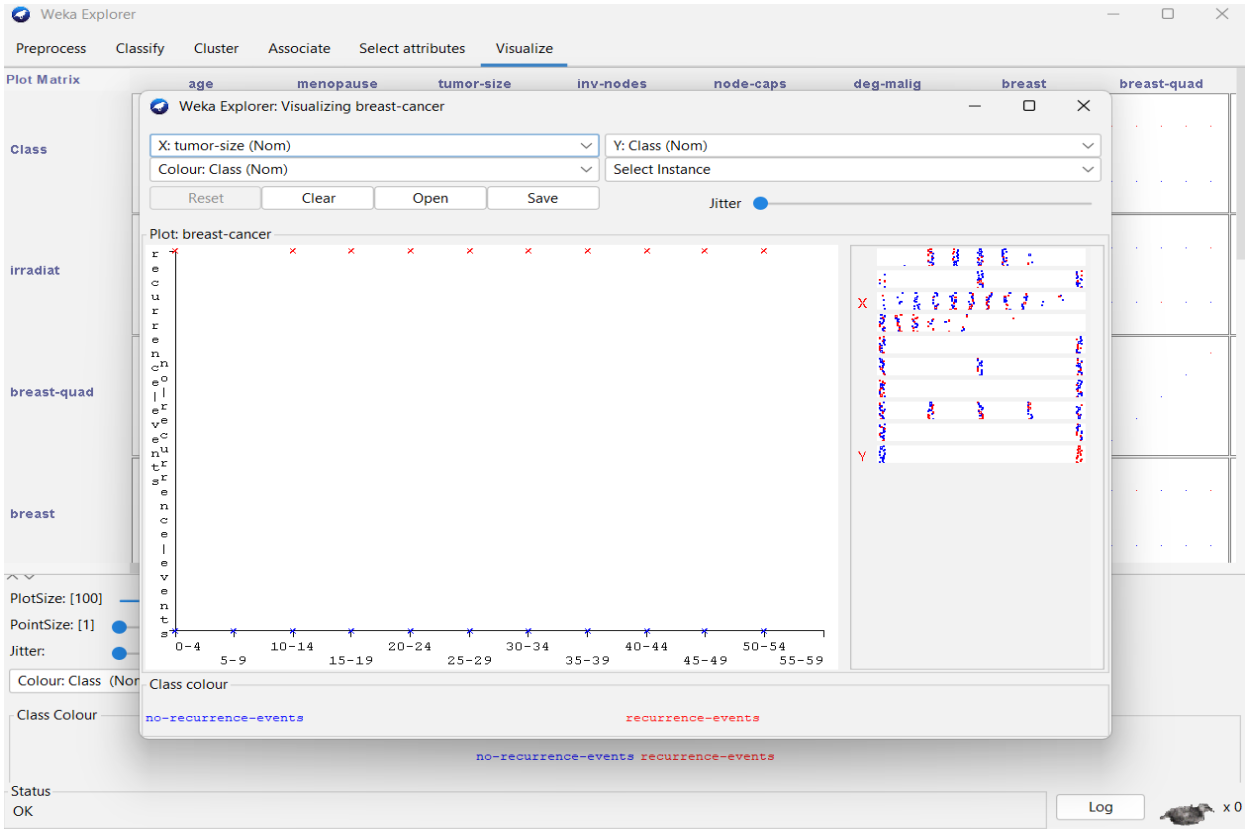
23 1 (0%)

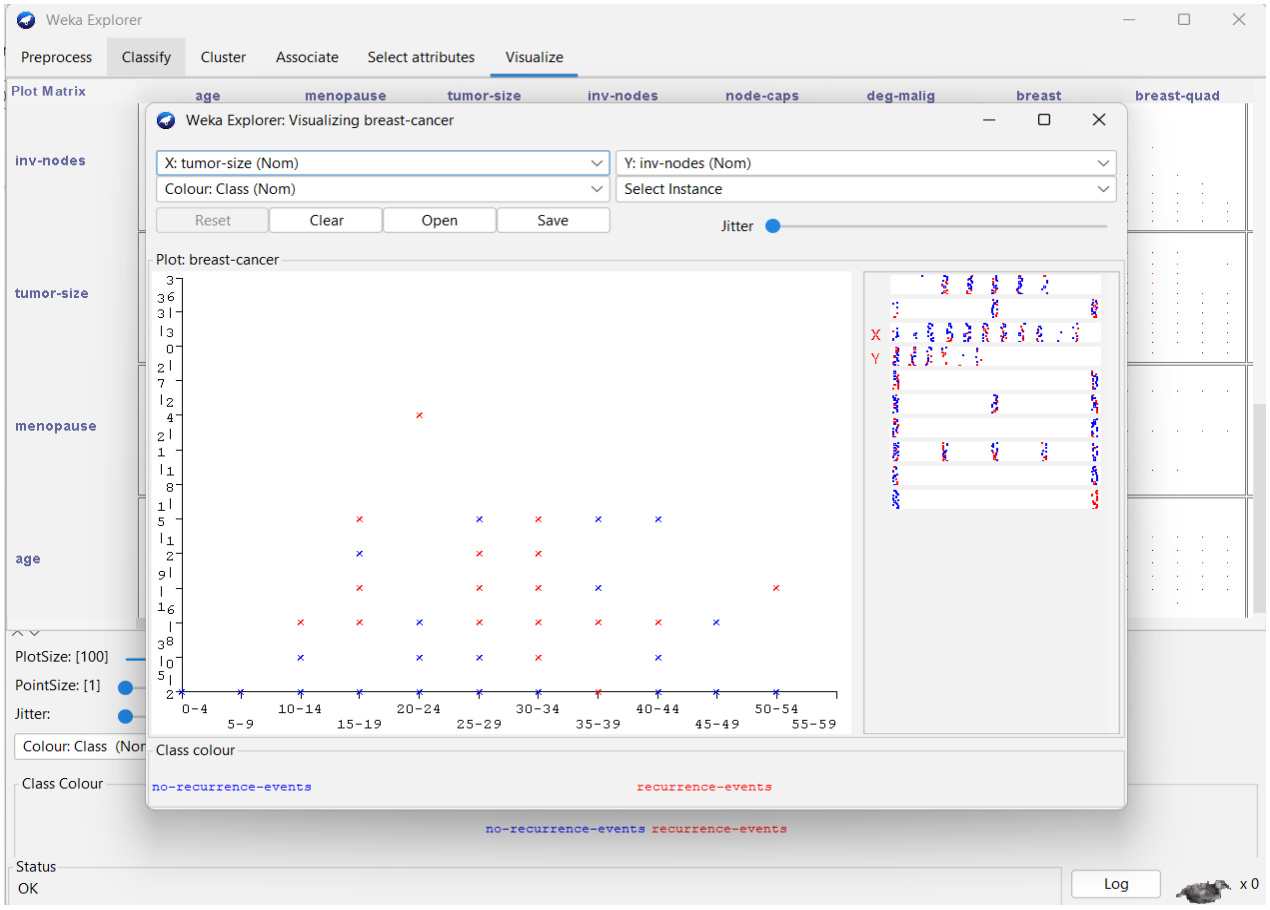
24 1 (0%)

25 2 (1%)……

PLOT:




Weka Explorer
Preprocess
Classify
Cluster
Associate
Select attributes
Visualize
Plot Matrix
age
menopause
tumor-size
inv-nodes
node-caps
deg-malig
breast
breast-quad
Class
irradiat
breast-quad
breast
Weka Explorer: Visualizing breast-cancer
X: tumor-size (Nom)
Y: Class (Nom)
Colour: Class (Nom)
Select Instance
Reset
Clear
Open
Save
Jitter
Plot: breast-cancer
recurrence-events
no-recurrence-events
0-4
5-9
10-14
15-19
20-24
25-29
30-34
35-39
40-44
45-49
50-54
55-59
X
Y
PlotSize: [100]
PointSize: [1]
Jitter:
Colour: Class (Nor
Class Colour
Class colour
no-recurrence-events
recurrence-events
Status
OK
Log
x 0


Weka Explorer
Preprocess
Classify
Cluster
Associate
Select attributes
Visualize
Plot Matrix
age
menopause
tumor-size
inv-nodes
node-caps
deg-malig
breast
breast-quad
inv-nodes
tumor-size
menopause
age
Weka Explorer: Visualizing breast-cancer
X: tumor-size (Nom)
Y: inv-nodes (Nom)
Colour: Class (Nom)
Select Instance
Reset
Clear
Open
Save
Jitter
Plot: breast-cancer
0-4
5-9
10-14
15-19
20-24
25-29
30-34
35-39
40-44
45-49
50-54
55-59
X
Y
PlotSize: [100]
PointSize: [1]
Jitter:
Colour: Class (Nor
Class Colour
Class colour
no-recurrence-events
recurrence-events
Status
OK
Log
x 0

RESULT:

Thus, the data analysis of cobweb hierarchial clustering algorithm using weka tools has been analyzed and observed successfully.